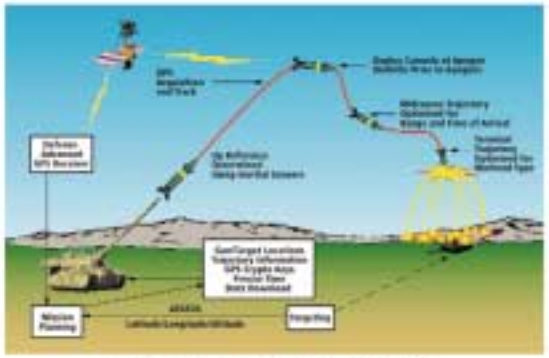
Excalibur 155mm Precision-Guided Extended-Range Artillery Projectile Family

Flight Test

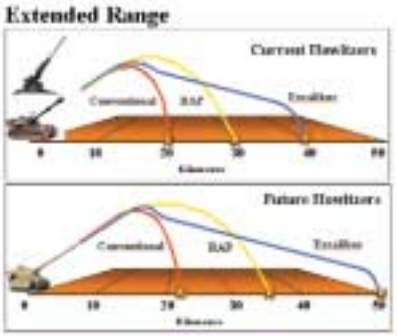
Submunition Dispense Test

Excalibur Family of Precision Guided Artillery Projectiles



Concept of Operations

Contractor Test Firings



Contractor Test Firings

MISSION

Provide the maneuver force with improved fire support through a precision-guided, extended-range, accuracy-enhancing, more-lethal family of 155mm artillery projectiles. Excalibur permits our 155mm artillery systems to regain range overmatch while precisely engaging targets up to 47km. Excalibur is a force multiplier that increases lethality while reducing the logistical burden for light, medium, and heavy forces.

DESCRIPTION AND SPECIFICATIONS

The Excalibur, XM982 is a family of smart, 155mm modular projectiles that incorporate three unique payloads. The Dual Purpose Improved Conventional Munitions (DPICM) variant is used against personnel, materiel, light armored targets, and other area targets. The Product Improved Sense and Destroy Armor (PI-SADARM) variant will be used to engage self-propelled artillery and armored targets. The Unitary Warhead will be used against bunkers and other hardened targets. An internal Global Positioning System (GPS)-updated inertial navigation system provides precision guidance and improved accuracy. Excalibur is effective in all weather and terrain. It contains a fuzing system that is inductively set by either an enhanced portable inductive artillery fuze setter or Crusader's inductive automated fuze setter. The target, platform location, and GPS-specific data are inductively entered into the projectile's mission computer, located in the nose of the projectile.

Upon firing, Excalibur will determine its up reference using inertial sensors. A trajectory correction to optimize range and time of arrival takes place midway between apogee and the target. Upon arrival, the cargo canister is expelled and a bladder inflates, dispensing the DPICM grenades radially. Detonation occurs on impact with a shape charge jet directed downward while the body simultaneously bursts into small fragments to provide anti-personnel effects. Grenades that fail to initiate on ground impact self-destruct several seconds later. The Excalibur gun-hardened, modular projectile is also designed to accommodate two PI-SADARM submunitions or a Unitary Warhead that will penetrate 8 inches of reinforced concrete.

Caliber: 155 mm
Weight: 106 lb
Max range: 37 km (from M109A6, M198 and XM777 digital howitzers), 47 km (from Crusader)
Number of submunitions: 64 DPICMs/rd, or 2 PI-SADARM/rd, or 1 Unitary/rd

FOREIGN COUNTERPART

In FY99 Congress directed the U.S. Marine Corps to pursue an international cooperative program with the Government of Sweden to explore a Trajectory Correctable Munition (TCM) concept proposed by BOFORS and their U.S. partner, Science and Applied Technologies, Inc. A number of other European countries are also interested in joining the Excalibur or TCM efforts.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

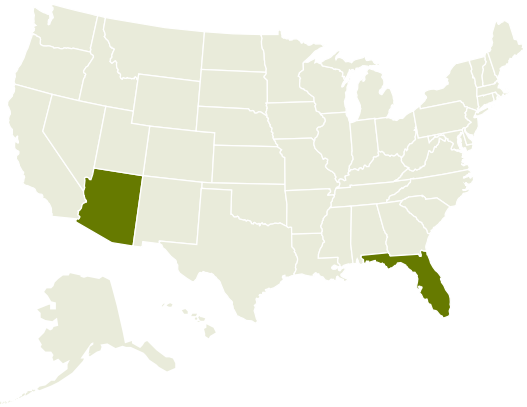
January 23, 1998 Award contract for DPICM engineering and manufacturing development (EMD).
Current Continue EMD.

PROJECTED ACTIVITIES

FY02 Begin PI-SADARM EMD.
2QFY03 Conclude development testing.
FY03 Begin Unitary warhead EMD.
2QFY04 Commence DPICM low-rate production.
1QFY06 Achieve DPICM milestone III.
3QFY06 Commence DPICM full-rate production.
4QFY06 Achieve DPICM initial operational capability.

PRIME CONTRACTORS

Raytheon (Tucson, AZ); Primex Technologies (St. Petersburg, FL)



* See appendix for list of subcontractors